

## Claims

1. Fiber cassette comprised of a housing (1),  
that is delimited by 2 congruent base surfaces (G) and at least one circumferential surface (M) and contains in its interior at least one cavity, comprising at least one layer of fibers or fiber bundles or hollow fibers (2),  
that in the interior of the housing (1) are arranged essentially parallel to at least one center plane and with their ends are anchored fixedly in the interior of the housing,  
wherein a cavity forms an outer compartment (6) that surrounds the exterior of the fibers (2),  
wherein the center plane does not intersect the base surfaces (G) within the cavity that forms the outer compartment (6),  
wherein the individual fibers (2) are arranged U-shaped or essentially parallel to one another and end within the interior of the housing (1),  
and wherein the housing (1) has at least one opening for supplying and/or removing fluids.
2. Fiber cassette according to claim 1, characterized in that the housing (1) has the shape of a body with polygonal or circular base surfaces.
3. Fiber cassette according to claim 1 or 2, characterized in that different fiber materials are combined with one another in one cassette.
4. Fiber cassette according to one of the claims 1 to 3, characterized in that at least one part of the fibers (2) are hollow fibers or hollow fiber membranes.
5. Fiber cassette according to claim 4, characterized in that the hollow fibers (2) are open at least at one end and the cassette comprises at least one additional inner compartment (5) with which the open ends of the hollow fiber are connected so that a substance exchange between inner and

outer compartments (5, 6) can take place only through the material of the hollow fibers.

6. Fiber cassette according to one of the claims 1 to 5, characterized in that the housing (1) comprises at least one large surface area opening to a compartment (5, 6) arranged therein and comprises means for a fluid-tight connection with compartments of other cassettes and/or one or several covers (4).  
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7. Fiber cassette according to one of the claims 1 to 6, characterized in that the housing (1) has channels (7, 8, 9, 10, 11, 12) for supply or removal of fluids to the inner (5) and/or outer compartment (6).  
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8. Fiber cassette according to one of the claims 1 to 7, characterized in that the housing (1) and/or the cover (4) is comprised of a flexible or rigid polymer or metal or glass or ceramic or a light-transmitting material.  
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9. Fiber cassette according to one of the claims 1 to 8, characterized in that at least one cover (4) is comprised of a material that, after having been punctured, will seal itself or comprised of a semipermeable membrane or a filter fabric.  
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10. Fiber cassette according to one of the claims 1 to 9, characterized in that at least one cover (4) has at least one opening for supply and/or removal of fluids.  
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11. Fiber cassette according to claim 10, wherein the cover (4) encloses at least one cavity that is connected to a compartment (5, 6) of the cassette.
12. Fiber cassette according to one of the claims 1 to 11, characterized in that on and/or in the fiber material (2) reagents are immobilized or the fiber cassette contains particles that enable a substance-specific

treatment of a fluid.

13. Fiber cassette according to claim 12, characterized in that the reagents bind substances or cells of the fluid or prevent such a binding action or are chemical or biochemical catalysts of proteins, such as enzymes or antibodies, or nucleic acids or complex compounds or noble metals.
14. Fiber cassette system comprised of at least two fiber cassettes that are fluid-tightly and fixedly or releasably connected to one another, wherein the compartments (5, 6) of at least two fiber cassettes are connected to one another across most of the adjoining surfaces or by an arrangement of pre-shaped connecting channels (11, 12).
15. Fiber cassette system according to claim 14, characterized in that at least two adjoining compartments (5, 6) of different cassettes are semipermeably connected to one another or are separated from one another by a cover (4).
16. Fiber cassette system according to claim 14 or 15, characterized in that at least two fiber cassettes form together with a bottom plate (P) a common housing (1) that comprises channels for supply and/or removal of media (11, 12) to the individual fiber cassettes (F).
17. Arrangement of at least one fiber cassette according to one of the claims 1 to 12 or a fiber cassette system according to one of the claims 13 to 16 and a carrier (T), wherein the carrier for each fiber cassette or fiber cassette system has devices for securing and for supply and/or removal (15, 16) of media to and from the individual cassettes.